New Hampshire Climate Change Policy Task Force

Draft Action Reports under Development
Revised and Potential Additions
Energy Generation and Use (EGU)
Transportation and Land-Use (TLU)

Prepared by NHDES
December 9, 2008

Table of Contents

EGU Action 2.4 – Address Barriers to Low- and Non-CO_2-Emitting Supply-Side Resources (Original Working Group Document – September 8, 2008)

Summary

The State of New Hampshire should identify and remove obstacles to siting and constructing energy facilities and transmission infrastructure in the state. These actions would better facilitate the development of new low- and non-CO_2 emitting facilities to enable the state to move away from carbon-based supply-side resources (i.e., fossil-fuel-fired power plants) while offsetting the impact of any potential load growth. The development of the new low-and non-emitting facilities could enable older high-CO_2 emitting facilities to be gradually retired. However, it is imperative that electrical transmission capability within the state also be enhanced and increased to enable power to be moved from those areas where hydro, solar photovoltaic, wind, geothermal, tidal and biomass technologies could best be deployed. These two goals could be accomplished by seeking methods to influence ISO-NE to expedite interconnection application review and approval for these types of facilities and establishing streamlined state and local permitting processes. New Hampshire's planning efforts cannot stand in isolation and should be coordinated with other states and Canada.

Program Description

1. Mechanism (*i.e., how the policy or program achieves the desired result*): Although significant and increasing resources will be deployed to reduce electrical demand through greater energy efficiency and clean distributed generation, existing supply-side resources will continue to be needed as New Hampshire makes the transition to a low-carbon future. The overall strategic plan must also anticipate load growth by enabling the construction of clean, new generating facilities.

   There is a critical need to meet demand and replace older facilities with newly constructed central-station plants that are large (200 + MW), medium (50-200 MW) and small (less than 50 MW) generating facilities. Furthermore, it is reasonable to assume that certain carbon-based fuels will become less readily available in the future and that energy prices will increase. An important component of a core strategy to manage future energy supply and cost structure is diversification of the supply mix. Building low- and non-carbon emitting generating facilities over the next 5 to 10 years would help New Hampshire meet the inevitable and growing demand for carbon-free energy and would assist in stabilizing and containing future energy prices. The primary technologies under consideration are hydro, solar photovoltaic, wind, geothermal, tidal and biomass.

   While addressing supply needs, it is imperative that electrical transmission capability within the state also be enhanced and increased to support the development of new low- or non- CO_2-emitting generation facilities. Consequently, the state should evaluate existing barriers to both facility siting and electrical transmission and should develop solutions to overcome any obstacles or deficiencies in the shortest possible time frame. Workable solutions would involve coordinated planning with neighboring states and Canada.

   Note: Because end-user, demand-side generation is addressed in other actions proposed by the EGU working group and the RCI working group, the action proposed here is not intended to include generation deployed at end-user locations to reduce consumption (e.g., solar panels and other demand-side technologies installed at industrial or residential sites).

2. Implementation Plan (*i.e., how to implement the specific policy or program*)
    a. *Method of Establishment (e.g., legislation, executive order)*
        i. Seek methods to influence ISO-NE to expedite interconnection application review and approval for these types of facilities.
        ii. Establish streamlined state and local permitting processes. Consider an expedited process for smaller generation facilities using renewable resources.
    b. *Resources Required*: ISO-NE, state government, PUC, NHDES, and local governing bodies must align support of such applications.
    c. *Barriers to Address*: Eliminate barriers for construction of new, clean generation.
        i. Address transmission infrastructure limitations, including the Coos County loop in northern New Hampshire
        ii. Address obstacles to speedy and efficient project review at the state and local levels.

3. Parties Affected by Implementation (*i.e., residents, businesses, municipalities, etc.*)
    a. *Parties Responsible for Implementation*: State legislature, NHDES, PUC, New Hampshire Site Evaluation Committee, and regulated utilities.
    b. *Parties Paying for Implementation*: Ratepayers in New Hampshire and potentially throughout New England would pay for enhanced transmission; company shareholders would pay for costs to construct new generation facilities.
    c. *Parties Benefiting from Implementation*: All citizens would benefit from reduced CO_2 emissions.

4. Related Existing Policies and Programs (*i.e., those that address similar issues without interacting*):

5. Complementary Policies (*i.e., those that achieve greater reductions through parallel implementation*)
    a. Encourage expanded sourcing of electrical supply contracts from low- or non-CO_2-emitting generating facilities to displace current CO_2-emitting resources and to meet new demand. Specifically, policies should be put in place to increase supplies from carbon-free sources (see EGU Action 2.4 – Low- and Non-CO_2-Emitting Supply-Side Resources).
    b. Enable the development of transmission resources in northern New Hampshire to facilitate renewable power transfers to southern New Hampshire. Also, transmission facilities should be installed to allow clean energy purchases. (See Senate Bill 383.)
    c. Allow the deployment and installation of clean, small-scale distributed energy and heat producing generating facilities. (See Senate Bill 451.)
    d. Evaluate the retention of existing nuclear power generation facilities into the future. This form of generation is considered in detail as a separate item (see EGU Action 2.5 – Nuclear Power Capacity).

6. Timeframe for Implementation: Begin in 2008 by passing appropriate legislation to provide an expedited facility siting review/approval process and to address existing electrical transmission limitations in New Hampshire.

7. Anticipated Timeframe of Outcome: Complete development of an expedited facility siting process and resolve existing transmission issues in 2009. Consider pending plans to construct facilities to meet on-line availability dates in the period from 2014 to 2020. These actions will be necessary if New Hampshire is to achieve the stated goal of a 25-percent reduction in carbon emissions by 2025.

Program Evaluation

1. Estimated CO_2 Emission Reductions: This action is not individually quantified for potential emission reductions. Significant reductions could be achieved by:
    - Importing more power from Canada
    - Importing more power from Maine (1,000 MW new wind energy is planned)

2. Economic Effects

    Note: Value analysis of electric rate change versus environmental benefit must be weighed for each program or project considered.

    a. Costs

        i. Implementation Cost: Low
        ii. Timing: Constant / even
        iii. Impacts: State government (due to administrative costs)

    b. Savings: Not directly quantifiable; proposed action is a supporting mechanism.

3. Other Benefits/Impacts:

    a. *Environmental*: The proposed action will reduce emissions of carbon dioxide and other greenhouse gases and primary air pollutants that contribute to climate change and damage our ecosystems. Emission reductions will directly improve air and water quality while indirectly benefitting the fish, wildlife, and ecosystems that depend on clean air and water.

    b. *Health*: Particulate matter and ozone precursors such as VOCs and NOx contribute to cardiac and respiratory ailments in humans and adversely affect the health of other living organisms. In particular, ozone formation increases dramatically during hot weather. Therefore, measures that mitigate climate warming by reducing harmful emissions will also be beneficial to the health of human populations and ecosystems in general.

    c. *Social*: Programs that promote environmental sustainability by conserving natural resources and reducing emissions have immediate and long-term benefits to society. Increased public awareness arising from such programs will help to alleviate climate change. Programs involving energy conservation and some alternative generation technologies have relatively short payback periods. These programs bolster the local economy in a number of ways: they produce "green" jobs, free up money that can be reallocated to other purposes, and result in greater economic security overall.

    d. *Other*: Energy efficiency and emission reductions will reduce the load on our aging infrastructure and will create demand for alternative technologies in the U.S. marketplace.

4. Potential for Implementation (*i.e., including challenges, obstacles and opportunities*)

a. *Technical*: Pending plans to construct facilities can be implemented relatively easily once siting and transmission policy issues are addressed.

b. *Economic*: New facilities will create many construction jobs, long-term employment and tax revenue which will have a positive impact on the state's economy and will avoid fuel expenses being paid to other states and countries.

c. *Statutory/Regulatory*: The Legislature and Commission has the authority to approve most needed changes. If NH attempts to socialize the costs of transmission improvements across New England, the ISO and/or FERC will need to be involved.

d. *Social*: Increased energy efficiency provides a variety of societal benefits, including cleaner air and lower energy costs. The effectiveness of energy efficiency programs, and the degree to which the public embraces them, will depend on the details of their design and implementation.

5. Other Factors of Note:

6. Level of Group Interest:

7. References:

EGU Action 2.6 – Importation of Canadian Hydro and Wind Generation
(Revised December 1, 2008)

Summary

To the extent that it reduces or does not raise electricity rates to the consumer, high voltage transmission lines should be built to import clean power generated from Canadian hydro and wind sources as a complimentary policy to developing non-carbon emitting generation in New Hampshire. Canada is developing vast new hydro and wind generation resources, which are greater than their local needs. This creates an opportunity for New Hampshire and the entire Northeast to obtain clean power. This could provide new power sources to offset future local and regional growth and facilitate retiring or curtailing the operation of fossil fuel-fired plants in New England. Contracts made for this renewable energy should be developed with consideration for the broader environmental impacts of the power sources as well as the impacts that this imported power would have on the development of in-state renewable resources.

Program Description

1. Mechanism (*i.e., how the policy or program achieves the desired result*): By both developing contracts or commitments for Canadian power companies or brokers and building new high capacity transmission lines, clean power can be purchased and transmitted south from Canada. This concept is not new. In the 1980s, a high voltage transmission line was built from Canada to facilitate lower cost energy purchases and transmission to New England. The new clean power line(s) go beyond the capability of the existing system so that new transmission is needed.

   The costs of the project, including construction and transmission costs would be included in the delivery cost of the electricity to the New Hampshire customers. The Task Force conditions its support for the development of these contracts with the requirements that any imported energy: be substantially and verifiably renewable; replaces fossil generation; and is competitively priced for retail electric consumers. The energy supply contracts should also be developed with consideration for the broader environmental impacts associated with the power sources, and the impacts that this imported power would have on the development of in-state renewable resources. Once these criteria and considerations have been addressed, the state and Public Utilities Commission should view this Action as being positive.

   The Task Force also noted that the large hydro projects, which could supply a portion of the imported power, are not eligible for RECs as part of the New Hampshire Renewable Portfolio Standard.

2. Implementation Plan (*i.e., how to implement the specific policy or program*)

   a. *Method of Establishment (e.g., legislation, executive order):* Public Utilities Commission (PUC) orders and positive legislative support to clarify issues as needed. The PUC would also need to coordinate with the ISO-NE and FERC.

   b. *Resources Required*: These agreements must be framed around the needed construction of a new high voltage transmission line(s) which would serve as a necessary conduit for power flow. A positive regulatory or legislative signal on this issue is very important.

   c. *Barriers to Address*: The barriers that New Hampshire needs to overcome are the state, and potential regional and federal level, approvals needed to allow such a project to proceed. This

includes PUC and/or legislative approvals to allow construction of a new transmission system. This signal will be the key catalyst to bring deals to closure.

3. Parties Affected by Implementation (*i.e., residents, businesses, municipalities, etc*.):
   a. *Parties Responsible for Implementation:* PUC and utilities or customers purchasing power from Canadian supplier, FERC and ISO-NE.
   b. Parties Paying for Implementation: Customers.
   c. Parties Benefiting from Implementation: All customers, Canadian renewable resource owners, and transmission owners/investors who are regulated by the Federal Energy Regulatory Commission under FERC approved transmission rates.

4. Related Existing Policies and Programs (*i.e., those that address similar issues without interacting*):

5. Complementary Policies (*i.e., those that achieve greater reductions through parallel implementation*):

   a. Existing
      - Regional Greenhouse Gas Initiative (RGGI)
      - Renewable Portfolio Standard (RPS)
   b. *Proposed*:
      - EGU Action 2.9 – Promote Low- and Non-CO_2-Emitting Distributed Generation

6. Timeframe for Implementation: Soon after 2012, depending on necessary review and approval steps.

7. Anticipated Timeframe of Outcome: Upon installation and successful testing.

<u>Program Evaluation</u>

Value analysis of electric rate change versus environmental benefit must be weighed for each program or project.

1. Estimated CO2 Emission Reduction

   a. (2012): 0 MMTCO2e

   b. (2025): 6.09 MMTCO2e

   c. (2050): 6.09 MMTCO2e

2. Economic Effects – ***Costs and Savings for this Action have not yet been completed.***
   a. Costs
      i. (2012):
      ii. (2025):
      iii. (2050):

   b. Savings ($)
      i. (2012):
      ii. (2025):

iii. (2050):

3. Other Benefits/Impacts
   a. *Environmental*: Importation of renewable energy can reduce emissions of carbon dioxide and other greenhouse gases and primary air pollutants that contribute to climate change and damage our ecosystems, if that energy replaces fossil generation in New England. Emission reductions resulting from retiring or reducing the operation of existing fossil generation in New England will directly improve air and water quality while indirectly benefitting the fish, wildlife, and ecosystems that depend on clean air and water. Additional environmental benefits would be gained in New England by avoiding the construction of new fossil generation . However, there are concerns about the impact of hydro power on methane generation in the reservoirs that are a matter under review by the Canadian governments in their review of new hydro generation in Canada..
   b. *Health:* Particulate matter and ozone precursors such as VOCs and NOx contribute to cardiac and respiratory ailments in humans and adversely affect the health of other living organisms. In particular, ozone formation increases dramatically during hot weather. Therefore, as with all measures that mitigate climate warming by reducing harmful emissions, this action will also be beneficial to the health of human populations and ecosystems in general to the extent that imported renewable energy replaces existing fossil generation in the New England.
   c. *Social:* Programs that reduce emissions have immediate and long-term benefits to society.
   d. Other:
4. Potential for Implementation (i.e., including challenges, obstacles and opportunities)
   a. *Technical:* The technology exists to do this work. Lead time continues to lengthen due to current high global demand for this equipment.
   b. *Economic:* This recommendation provides short term value in the form of construction jobs during the 3-4 year construction period, provides a smaller number of long-term jobs related to the maintenance and operation of the new transmission facilities, provides long-term property tax value to the towns in which the facilities are located, and provides additional long-term state revenue tax revenue from the taxed net income on the facilities. . The benefits to electric customers would be determined by the specific terms of any purchased power agreement and the reductions to New England fossil generation which would be subject to state regulatory review and confirmation at the time of any filings for state approval.
   c. Statutory/Regulatory:
   d. *Social:* There may be resistance to allow siting of any new, larger power projects. This will require significant effort to address concerns and develop the necessary support.
5. Other Factors of Note:
6. Level of Group Interest:
7. References:
   - **ISO-NE Scenario Analysis Report**

Exploring the economic, reliability, and environmental impacts of various resource outcomes for meeting the region's future electricity needs
http://www.iso-ne.com/committees/comm_wkgrps/othr/sas/mtrls/elec_report/scenario_analysis_final.pdf

EGU Action 2.7 – Allow Regulated Utilities to Build Renewable Generation
(Minor Revisions - December 8, 2008)

Summary

To the extent that it increases New Hampshire's overall renewable energy capacity and the rate at which those resources are brought online, the State should provide regulated utilities with the authority to construct and/or acquire renewable generating assets. The only regulated electric utility that currently owns generation is Public Service of New Hampshire (PSNH), and under existing law PSNH and other utilities[1] are only specifically authorized to invest in or own new small-scale distributed generation under a new 2008 law. As noted in the summary below, this issue has been an area of intense debate within the Legislature and a wide range of opinions exist among the various stakeholder groups across the state. However, in the interest of reducing the State's greenhouse gas (GHG) emissions and reducing vulnerability to global energy price volatility, New Hampshire's energy planning efforts should consider the significant resources and experiences that utilities can provide in the development of new renewable generation, in conjunction with a strategy of aggressively encouraging new low-carbon generation sources so that ultimately less fossil fuel generation plants are needed in New England.. The key element to achieve the GHG reductions is to draft legislation that gives regulated utilities the authority to construct and/or acquire renewable generating assets. This authority should be provided with consideration to impact that it will have on the benefits provided by market competition provided by the merchant generating plant.

Program Description

Summary of Electric Generation Restructuring[2]

Revised Annotated Statutes (RSA) 374-F set forth the policy and implementation steps for restructuring New Hampshire's electric utility industry to a competitive market. As a result of the enactment of RSA 374-F in 1996, the PUC ordered the electric utilities to divest their ownership interests in generation assets in order to eliminate any vertical market power. Electric utilities were to become primarily transmission and distribution companies. After protracted court battles between the utilities and the state on various issues related to restructuring, divestiture proceeded, most notably in the negotiated PSNH Settlement Agreement as approved by the PUC in 2000. The Legislature, through passage of SB 472 in 2000, played a key role in enabling and setting forth important terms of the Settlement Agreement. In it, the Legislature directed that PSNH fossil generation assets be sold by July 1, 2001, "unless the PUC finds due to circumstances beyond its control that further delay is in the public interest."

However, in 2001, House Bill 489 was passed in reaction to the electric restructuring debacle that occurred in California during the prior summer and the increases in wholesale prices for electricity in New England. The 2001 legislation specified that PSNH's fossil and hydro assets could not be divested any sooner than February 1, 2004, but that the PUC should expeditiously initiate and complete the sale of Seabrook to benefit customers' stranded cost recovery obligations. In addition, the legislation extended the availability of transition service for residential, commercial and industrial customers. In essence, the

[1] This excludes the New Hampshire Electric Cooperative and municipal electric utilities, which are not subject to the restrictions placed on other utilities in the state.

[2] This summary was based on a draft document, entitled "Legislative Policy on the Generation of Electricity", that was presented by Joel Anderson, House Committee Research Office, to the State Energy Policy Commission on October 25, 2006.

Legislature put a temporary brake on full divestiture of generation assets and created a safety net for electric consumers.

In 2003 the Legislature passed Senate Bill 170 (RSA 369-B:3-a) which specified that "the sale of PSNH fossil and hydro generation assets shall not take place before April 30, 2006. …..subsequent to April 30, 2006, PSNH may divest its generation assets if the commission finds that it is in the economic interest of retail customers of PSNH to do so, and provides for the cost recovery of such divestiture."

Senate Bill 170 provided that "prior to any divestiture of its generation assets, PSNH may modify or retire such generation assets if the commission finds that it is in the public interest of retail customers of PSNH to do so, and provides for the cost recovery of such modification or retirement." In large part, this statutory language was added to allow PSNH to convert one of its coal boilers at Schiller to a wood-burning unit.

It seems to be generally accepted that electric utilities can not currently build new power plants of any significant size. Recent attempts have been made in the Legislature, which have failed, to enable utilities to do so again. These attempts have triggered the policy debate on whether changes in the market, new supply needs, or other perceived public needs such as constructing a new wood-fired plant in the North Country, are best met by the private sector and competitive markets or by public utilities and regulated rates. This debate has not been resolved by the Legislature.

1. Mechanism (*i.e., how the policy or program achieves the desired result*):

   Society needs to move away from carbon-based supply-side resources and transition towards generating facilities that are low- or non-CO_2-emitting. Although significant and increasing resources will be deployed to reduce electrical demand through greater energy efficiency, clean distributed generation and efficient co-generation projects, some of the current generating resources will be needed to bridge the transition from today's balance of supply and demand to a low-carbon emissions future. As efforts continue in improving efficiency and reducing demand, the overall strategic plan must also anticipate load growth. An additional, and reasonable, assumption is that certain fossil fuels will be less available and more expensive in the future. As this occurs, energy prices are likely to increase proportionately.

   An important component of a strategy to manage future energy costs is to diversify the supply mix and have less carbon-based supply facilities. This is accomplished by building low- and non-carbon emitting generating facilities over the next five to fifty years, and, importantly, by retiring older, dirtier and more carbon-intensive fossil fuel plants in New England. These investments will assist in stabilizing rates into the future and be sound investments to meet increasing demands for carbon-free energy. These investments can also provide high value to the New Hampshire economy by material procurement and wages for local craftsmen. This, in turn, benefits local town(s) and the state economy. Finally, the hope is that these plants will reduce future energy costs with savings returned to the customers.

   Regulated utilities may have a strong desire to develop new renewable generation. However, in order to allow them to do so, the current NH law that specifically addresses new regulated generation should be changed.

   Many propose that New Hampshire should address additional generation requirements with a portfolio of utility-owned renewable generation in addition to market provided renewable generation,

which such new state regulated generation being at least one 50 MW biomass plant, up to three 20-25 MW distributed generation units to help meet peak load requirements, up to 12 MW of photovoltaic (solar) cells, and up to six 24 MW wind projects. These efforts, in addition to merchant developed renewable generation, would complement increasing energy efficiency and demand-side programs while providing a balanced generation portfolio and keeping customers' best interests in mind. However, even with this amount of merchant and state regulated renewable generation, New England is expected to still fall short of its goals and even more renewable generation is desirable. It is also important to acknowledge that while addressing supply needs, the electrical transmission capability within the state must be enhanced and increased to support the development of new low- or non-CO_2-emitting generation.

It is also important that any policy to build new utility-owned renewable generation must be combined with aggressive efforts to reduce demand for electricity through energy efficiency and demand response, as well as retiring the unneeded fossil fuel-fired generating plants in New England. This is critical to achieve New Hampshire and the region's CO_2 reduction goals.

2. Implementation Plan (*i.e., how to implement the specific policy or program*)

    a. *Method of Establishment (e.g., legislation, executive order)*

        i. Seek legislation to change existing law to allow regulated utilities to construct and or acquire renewable generation.

        ii. Establish streamlined state and local permitting processes. Consider an expedited process for smaller generation facilities using renewable resources.

        iii. Provide for expedited PUC proceeding schedules so that review processes may be held prior to commencement of a project and construction.

    b. *Resources Required*: NH Legislature, state government, PUC, NHDES, and local governing bodies must align support of both legislation and specific proposals.

    c. *Barriers to Address*: Eliminate legal barriers for regulated utilities to construct new, clean generation.

        i. Establish clear legislation authorizing regulated utilities to construct or acquire renewable generation.

        ii. Address obstacles to speedy and efficient project review at the state and local levels.

        iii. Address transmission infrastructure limitations, including the Coos County loop in northern New Hampshire.

3. Parties Affected by Implementation (*i.e., residents, businesses, municipalities, etc*.):

    a. *Parties Responsible for Implementation:* State legislature, NHDES, PUC, New Hampshire Site Evaluation Committee, and regulated utilities.

b. *Parties Paying for Implementation:* Customers of the regulated utility would pay the cost to construct new generation facilities.

c. *Parties Benefiting from Implementation:* Customers of the utility would benefit from anticipated cost savings (e.g. lower compliance costs, avoidance of higher cost market purchases, etc.) that would be reviewed during a PUC proceeding. All citizens would benefit from reduced CO_2 emissions. Investors in utilities that build and own generation will also benefit through the state regulated rates of return they earn on such new plants, which would be included as one of the overall costs of the facilities serving customers which would be included in customers' electric rates for those customers who do not otherwise choose an electric supplier.

4. Related Existing Policies and Programs (*i.e., those that address similar issues without interacting*):

5. Complementary Policies (*i.e., those that achieve greater reductions through parallel implementation*): subsequent

   a. Enable the development of transmission resources in northern New Hampshire to facilitate renewable power transfers to southern New Hampshire. Also, transmission facilities should be installed to allow clean energy purchases. (See Senate Bill 383.)

   b. The deployment and installation of clean small scale distributed energy and heat producing generating facilities is now allowed. (See Senate Bill 451.)

   c. Evaluate the retention of existing nuclear power generation facilities into the future. This form of generation is considered in detail as a separate item (see EGU Action 2.5 – Nuclear Power Capacity).

6. Timeframe for Implementation: Begin in 2008 by passing appropriate legislation to allow regulated utilities to build new generation.

7. Anticipated Timeframe of Outcome: Pass enabling legislation in 2009. Provide incentives for the construction of facilities to be on-line in support of New Hampshire's stated goal of a 25-percent reduction in carbon emissions by 2025 thus encouraging the development of:
   a. 50 MW by 2012 – biomass
   b. 200 MW by 2025 – biomass, wind, and other
   c. 400 MW by 2050 – biomass, wind and other

<u>Program Evaluation</u>

Value analysis of electric rate change versus environmental benefit must be weighed for each program or project.

1. Estimated CO2 Emission Reduction –
   a. (2012): 0.14 $MMTCO_2e$
   b. (2025): 0.56 $MMTCO_2e$
   c. (2050): 1.12 $MMTCO_2e$

2. Economic Effects – *Costs and Savings for this Action have not yet been completed.*

A reasonable assumption is that certain carbon based fuels will be less available and more expensive in the future. As this occurs, energy prices will increase proportionately. An important component of a core strategy to manage future energy costs is to diversify the supply mix and have less carbon-based supply facilities. This is accomplished by building low and non-carbon emitting generating facilities over the next five to fifty years, thereby causing fossil based generation to be reduced . These investments can assist in stabilizing rates into the future and be sound investments to meet increasing demands for carbon-free energy. These investments will also provide high value to the New Hampshire economy by material procurement and wages for local craftsmen. This, in turn, benefits local town(s) and state economy. Finally, the hope is that these plants will reduce future energy costs, with savings realized by customers in electric rates.

a. Costs
    i. (2012):
    ii. (2025):
    iii. (2050):

b. Savings ($)
    i. (2012):
    ii. (2025):
    iii. (2050):

3. Other Benefits/Impacts
    a. *Environmental:* The proposed action will reduce emissions of carbon dioxide and other greenhouse gases and primary air pollutants that contribute to climate change and damage our ecosystems if fossil-fuel fired plants are operated less or retired as a result of building new cleaner generation. Emission reductions resulting from retirements or reduced need to operate fossil fueled generation in New England will directly improve air and water quality while indirectly benefiting the fish, wildlife, and ecosystems that depend on clean air and water.

    b. *Health:* Particulate matter and ozone precursors such as VOCs and NOx contribute to cardiac and respiratory ailments in humans and adversely affect the health of other living organisms. In particular, ozone formation increases dramatically during hot weather. Therefore, measures that mitigate climate warming by reducing harmful emissions through retiring or reducing the need to operate fossil fuel fired generating units in New England will also be beneficial to the health of human populations and ecosystems in general.

    c. *Social:* Programs that promote environmental sustainability by conserving natural resources and reducing emissions have immediate and long-term benefits to society. Increased public awareness arising from such programs will help to alleviate climate change. Programs involving alternative generation technologies have relatively short payback periods. These programs bolster the local economy in a number of ways: they produce "green" jobs, free up money that can be reallocated to other purposes, and result in greater economic security overall.

d. *Other:* Energy efficiency and emission reductions will reduce the load on our aging infrastructure and will create demand for alternative technologies in the U.S. marketplace.

4. Potential for Implementation (*i.e., including challenges, obstacles and opportunities*)
   a. *Technical:* Pending plans to construct facilities can be implemented relatively easily once siting and transmission policy issues are addressed.

   b. *Economic:* New facilities will create many construction jobs, long-term employment and tax revenue which will have a positive impact on the state's economy and will avoid fuel expenses being paid to other states and countries. The rate impacts of any new plants should be reviewed by the PUC prior to construction.

   c. *Statutory/Regulatory:* The Legislature and Public Utilities Commission has the authority to approve most needed changes.

   d. *Social:*

5. Other Factors of Note:

6. Level of Group Interest:

7. References:

Evaluate the Potential to Replace Existing Coal-Fired Generation (EGU Action 2.10)
(New Submission – December 1, 2008)

Summary:

The State of New Hampshire should immediately conduct an independent evaluation of the potential alternatives to the continued operation of Merrimack Station with scrubbers as a coal-fired coal electric generation facility. The purpose of the study would be to determine whether feasible Merrimack Station replacement scenarios exist which could be deployed to reduce the CO_2 emissions of existing base load power generation more quickly and in a manner which maintains grid reliability and which does not lead to higher costs to consumers. Merrimack Station in Bow New Hampshire is presently the source of 20% of all man-made CO_2 emissions annually in New Hampshire. The Task Force feels that such a study should be done without altering the current legislative mandate to install scrubbers at the plant to reduce mercury and sulfur dioxide emissions. The cost of halting this process would be accounted for within the study.

Overall Implementation:

- The NH Public Utilities Commission would submit an Request for Proposals (RFP) seeking third party evaluation of the potential options (e.g., replacement with biomass and energy efficiency; importation of renewable wind and hydro from Canada)
- Funding for the study may come from the RGGI Fund administered by the Energy Efficiency and Sustainable Energy Board.

Potential Responsible Parties:

- The Public Utilities Commission
- The Energy Efficiency and Sustainable Energy Board
- The Office of Energy and Planning
- The Department of Environmental Services

Timeframe:

- The RFP for the study would be released immediately as work on the scrubber installation is in process.
- A deadline for completion of the study would be set so that if feasible alternatives were to be identified they could be implemented without incurring significant additional costs by interrupting the scrubber installation process.

TLU Action 1.D.1 – Address Highway Travel Speeds
(Revised November 17, 2008)

Summary

The State of NH should explore mechanisms to reduce average travel speeds on state and interstate highways to improve overall vehicle fuel efficiency. This could occur through enforcement of existing speed limits and through driver education programs to encourage voluntary reductions. Evaluation of a lower speed limit should also be conducted.

Program Description

1. Mechanism *(i.e., how the policy or program achieves the desired result):*

   U.S. Department of Energy data show that fuel economy decreases rapidly at speeds above 60 mph: the average loss in fuel economy is 8.2 percent when speed is increased from 65 to 70 mph. At a posted speed of 65 mph, many vehicles travel at 65 to 75 mph; and a significant percentage of traffic moves at even higher, less efficient speeds. The publication "Reducing Traffic Speed" by the Technology Transfer Center New Hampshire LTAP at UNH states: "Police Enforcement lowers traffic speeds when police consistently issue tickets. However, cities and towns must commit personnel for a long time. When enforcement ends, drivers will return to the prior speeds." The result of diminished enforcement is that motorists on major highways drive in excess of 65 mph. Stricter speed enforcement would benefit those who already adhere to speed limits as well as those who prefer to exceed speed limits. The benefits would come in the form of fuel savings, emission reductions, and reduced incidence of highway injuries and fatalities.

2. Implementation Plan *(i.e., how to implement the specific policy or program):*

   a. *Method of Establishment (e.g., legislation, executive order):* Executive Order and/or legislation.

   b. *Resources Required:* Department of Transportation, Law Enforcement, funds for new speed limit signs.

   c. *Barriers to Address (especially for medium to low feasibility actions):* Politics associated with the change, enforcement costs.

3. Parties Affected by Implementation (i.e., residents, businesses, municipalities, etc.):

   a. *Parties Responsible for Implementation:* State and local government.

   b. *Parties Paying for Implementation:* State and local government.

   c. *Parties Benefiting from Implementation:* Consumers – safer roads, and better gas mileage.

4. Related Existing Policies and Programs (*i.e., those that address similar issues without interacting*):

5. Complementary Policies (*i.e., those that achieve greater reductions through parallel implementation*):

   a. *Existing*:

   b. *Proposed:*

6. Timeframe for Implementation: 6 months to 1 year to pass legislation, proceed through public notice and outreach, and develop coordination/cooperation among law enforcement agencies. Changing speed limit signs could be done in about 2 weeks.

7. Anticipated Timeframe of Outcome: Immediate

Program Evaluation

1. Estimated CO_2 Emission Reduction:

Timeframe	**CO_2 Emission Reductions** (MMTCO2e per year**)**	
	Enforce Current Highway Speed Limits[3]	**Lower Posted Highway Speed Limits**[4]
Short-term (2012)	0.06	0.11
Mid-term (2025)	0.18	0.35
Long-term (2050)	0.25	0.48

2. Economic Effects:
   a. Costs:
      i. Implementation Cost: Low for both scenarios
      ii. Timing: Constant / even for both scenarios
      iii. Impacts: State government for both scenarios
   b. Savings:
      i. Potential Economic Benefit: Moderate and moderately high, respectively
      ii. Timing: Low short-term / mostly long-term for both scenarios
      iii. Impacts: Consumer – evenly distributed for both scenarios
3. Other Benefits/Impacts:
   a. *Environmental*: This would reduce emissions of carbon dioxide, greenhouse gases, and other primary air pollutants in order to mitigate the effects of climate change and pollution of our ecosystems. This would lead to improved air and water quality directly as well as have more indirect effects on the fish and wildlife and the ecosystems upon which they depend.
   b. *Health:* Human health benefits will be realized by decreasing exposure to toxic and hazardous pollutants, many of which may have an effect that is exacerbated by the increase in hot summer days. Avoiding the impacts of air pollution can reduce the incidence of cardiac and respiratory disease. There will be other health benefits due to the reduction in car accidents brought about by safer highways.
   c. *Social*: It will impact drive times but consumers will save money & highways will be safer. In addition there will be a reduced dependence on foreign oil and the associated economic stability that may bring through reduced economic risks of the global energy market as well as increase in dollars kept instate.
   d. *Other*:

[3] Assumes that a reduction in *average* highway speed from 70 to 65 would result in an 8.2% increase in fuel efficiency applied to highway miles assumed to be 40% of the total Vehicle Miles Traveled (VMT) annually in New Hampshire.
[4] Assumes that a reduction in *average* highway speed from 70 to 55 would result in an 17.1% increase in fuel efficiency applied to highway miles assumed to be 40% of the total Vehicle Miles Traveled (VMT) annually in New Hampshire.

4. Potential for Implementation (*i.e., including challenges, obstacles and opportunities*):
    a. *Technical*: There are no technical barriers to implementation.
    b. *Economic*: Changing the speed limit signs is not expensive. No data are available on whether additional law enforcement officers would be needed to implement the program, but additional tickets could bring in necessary revenue.
    c. *Statutory/Regulatory*: This would require legislation.
    d. *Social*: It might be difficult to get the public to buy into reduced speed limits – this action could be perceived as infringing on personal freedoms.
5. Other Factors of Note: This could be combined with other programs such as allowing buses to travel at higher speeds which would help encourage commuters to use public transit. Emissions of nitrogen oxide, the primary pre-cursor pollutant to ground level ozone (smog) formation, also increase at speeds above 48 mph.
6. Level of Group Interest: High. The working group considered this an essential action to undertake in the near-term to achieve significant reductions in CO_2 emissions from the transportation and land use sector.
7. References:
    - http://www.t2.unh.edu/fall04/pg6.html
    - http://drive55.org/content/view/18/5/
    - http://www1.eere.energy.gov/vehiclesandfuels/facts/favorites/fcvt_fotw222.html

Support Strong Climate Action at the Federal Level (GLA 1.6)
(New Submission - December 9, 2008)

Summary:

The New Hampshire Climate Change Policy Task Force endorses strong national climate legislation that will provide a significant portion of anticipated pollution allowance revenues to help New Hampshire fund the emission reduction, clean energy, energy efficiency, natural resources protection, and adaptation priorities contained in this Climate Change Action Plan. Properly structured national climate legislation could provide the needed funding to implement many of the capital-intensive, higher-impact priorities identified in this plan. Funding generated by passage and enactment of a national climate law can drive the large emissions reductions needed while growing the New Hampshire economy if directly recycled to the states and properly targeted,. To accelerate the transition to an energy-efficient and clean energy economy, these funds should flow back to states through a variety of conduits to ensure flexibility, accountability, and fit to local needs.

Overall Implementation:

- Support Congressional delegation efforts to encourage passage of a national climate bill that would recycle revenue that would support the implementation of state Climate Change Action Plans.
- State level funding resulting from national legislation should be directed towards:
  - tax credits to support residential and business investment in measures consistent with this Plan;
  - state and local government, NGO, and privately-administered matching grant and loan funds;
  - direct grants or tax rebates to low-income households least able to adjust to potentially higher energy prices and designed to migrate participants as rapidly as possible to greater energy efficiency; and
  - loans and grants for student and worker green jobs training.

Potential Responsible Parties:

- Congressional delegation
- Governor's office and State Agencies
- Non-Governmental organizations

Timeframe:

- It is anticipated that a national climate bill will be introduced in Congress in the 2009 Legislative session with passage likely in the next two years. The incoming Obama administration has made a national climate bill one of its top priorities.